

III. *An Inquiry to shew, what was the ancient English Weight and Measure according to the Laws or Statutes, prior to the Reign of Henry the Seventh.*

Redde, Nov. 24,
1774. **W**ILLIAM the Conqueror, by his charter, confirmed to the English all their ancient laws, with such additions or alterations as he made therein, to their advantage. The 57th clause of that charter is, "*De mensuris et ponderibus. Et quod habeant per universum regnum, mensuras fidelissimas et signatas, et pondera fidelissima et signata sicut boni prædecessores statuerunt.*" From this clause it seems clear, that king WILLIAM ordained, sealed standards both of weights and measures, to be made, such as his predecessor king EDWARD had ordained. Neither weights or measures are here described particularly; but the subsequent statutes define them more plainly. And the *Chronicon Pretiosum* tells us, that from historians it appears, the Conqueror determined what the weight of the sterling penny, or penny weight, should be, to weigh 32 grains dry wheat. Consequently the standard penny weight was made equal to the weight of 32 grains wheat. Succeeding kings confirmed WILLIAM's charter; and even the great charter granted by king JOHN, is only to explain and restore the
ancient

ancient laws, which had been infringed. The statutes of 51st of HENRY III. and 31st of EDWARD I. explain the ancient weights and measures; that is to say, the English penny called a sterling, round without clipping, was to weigh 32 grains dry wheat, taken from midst of the ear, and 20 of those penny weights were to make an ounce, and 12 ounces a pound; and 8 of those pounds were to be a gallon of wine, and 8 of those gallons to make a London bushel, which is the $\frac{1}{8}$ th part of a quarter. The definition of the penny weight in these statutes agrees with the determination of WILLIAM the Conqueror, and shows the legal weight continued the same. What the weight of that pound was, so raised from a penny weight, equal to the weight of 32 grains of wheat, we may clearly learn from that declaration in the 18th of HENRY VIII. when he abolished that old pound, and established the Troy weight; which says, that the Troy pound exceedeth the old Tower pound by $\frac{3}{4}$ of the ounce. As the Troy pound established by HENRY VIII. is the same as is now in use, consisting of 5760 Troy grains, and 480 grains to the ounce, and 12 ounces to the pound: so 360 grains is $\frac{3}{4}$ of the ounce, which, deducted from 5760, leaves 5400 Troy grains, equal to the weight of that old Saxon pound which he abolished. But to trace out experimentally the weight of that penny weight, raised from 32 grains of wheat, I got a small sample of dry wheat of last year 1773 (the wheat of that year but ordinary); and, from a little handful taken therefrom, I told out just 96 round plump grains, dividing them into

parcels of 32 grains each, and all three weighed exact $22\frac{1}{2}$ Troy grains; consequently, 240 such penny weights, which the old pound consisted of, were equal only to 5400 of our present Troy grains, conformable to the declaration of HENRY VIII. Thus the weight of that old pound is clearly ascertained to be lighter than the present Troy pound by $\frac{3}{4}$ of an ounce; and it clearly shews, they were two different weights. By those statutes of HENRY III. and EDWARD I. it is said, that 8 pounds were to make a wine gallon, and 8 of those gallons to be a bushel, and 8 bushels a quarter; consequently the wine and corn gallon were one and the same measure. The statute of the 12th of HENRY VII. says, the gallon measure was to be 8 pounds of wheat, which ascertains what was to be understood by former statutes, and is consonant to reason, to fix the measure of wheat by its own weight, not by that of wine, as wheat was an article of greater importance to the community to ascertain its measure than wine; and a gallon measure to contain 8 pounds of wheat, must be $\frac{1}{4}$ part larger in cubical contents than a measure to contain 8 pounds of wine. As it appears by the charter of WILLIAM the Conqueror, that there were sealed standards made of weights and measures, we cannot doubt, but they were preserved and kept in the king's exchequer, for legal standards; and as several statutes direct their being made of metal, they were permanent and certain, whereby to make more: which HENRY VII. expressly tells us he practised, by making new according to the old: so that there could be no need to re-

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cur to 32 grains of wheat, much less to 7680, every time new standards were to be made, unless we suppose our ancestors defective in common sense. Whenever, by new statutes, fresh standards were directed to be made, we may observe, the assize of weight and measure continued uniformly fixed and described to be one and the same, to shew there was no alteration made or intended. And thus, by the laws of Assize, from WILLIAM the Conqueror to the reign of HENRY VII. the legal pound weight continued a pound of 12 ounces, raised from 32 grains of wheat, and the legal gallon measure invariably to contain 8 of those pounds of wheat, 8 gallons to make a bushel, and 8 bushels a quarter; the bushel, therefore, contained 64 of those pounds of wheat, and the quarter 512 pounds. These were the legal weights and measures for common use, during that period. The first alteration, really made therein, was in the 12th year of HENRY VII. as will be mentioned hereafter. That the laws of Assize were often infringed, is very evident from the frequent complaints, mentioned in COTTON'S Abridgement of the Tower Records, against the king's purveyors; particularly in the 14th of EDWARD III. for remedy against outrageous takings of purveyors; and in the 45th of EDWARD III. that the king should be served by *common measure*; and in the 3d of HENRY V. that the king's purveyors do *take 8 bushels of corn only, to the quarter striked*. The general answers whereto were, that the statutes should be observed. It appears also, that others infringed the laws of assize. For the statute of 27th of

EDWARD III. says, Some merchants bought Avoirdupois merchandizes by one weight, and sold by another; which plainly implies, they bought by some weight heavier than the legal, and sold by the legal weight which was lighter; for it is rather too absurd for supposition to imagine, they bought by a light weight, and sold by a heavier. The statute, therefore, to enforce observance of the laws of assize, only wills and establishes, that there be, *one weight, one measure, and one yard, through all the land.* This can be understood to mean no other, than the legal assize, which preceding statutes had enacted. And farther, in the reign of HENRY VI. we see that buyers of corn, bought by a vessel, called a fatt, of 9 bushels, which contained 72 gallons; and like those merchants before mentioned in the statute of EDWARD III. we may presume they sold by another measure, the legal quarter of 8 bushels, containing but 64 gallons: for the statute of 9th HENRY VI. forbids the buying by that vessel, called a fatt. The prohibition implies the illegality of the vessel and its use, and implies also the enforcement of the laws of assize. Taking therefore all the several statutes together, in one connected view, those that fix the laws of assize, with those to reform abuses committed against them, we are led to conclude, those laws of assize continued uniformly one and the same, till HENRY VII. altered them. Having thus shewn by those laws, that the old pound weight was a Saxon pound of twelve ounces, raised from 32 grains of wheat, and was equal only to 5400 of our present Troy grains; and that the measure of capacity was
a gallon,

a gallon, to contain 8 of those pounds of wheat, and 8 of those gallons made a bushel: I shall now endeavour, by help of figures, to demonstrate what was the cubical contents both of the gallon and bushel measures.

We know, the present Troy pound consists of 5760 Troy grains, and that 7000 of those Troy grains are equal to the present Avoirdupois pound of 16 ounces, and that 5400 of those Troy grains are equal to the old Saxon pound of 12 ounces; consequently, the old Saxon pound was $\frac{540}{576}$ of the present Troy pound, and the old Saxon pound was $\frac{54}{70}$ of the present Avoirdupois pound. We know, modern experiment hath proved the weight of 1728 cubic inches of wheat, common sort, to be $47\frac{1}{2}$ pounds Avoirdupois; and of a better sort, to weigh from $48\frac{1}{4}$ to $48\frac{1}{8}$ pounds Avoirdupois, the difference in their weight is not very great; however, I will take the lowest weight to compute by, the $47\frac{1}{2}$ pounds Avoirdupois, which, in Saxon weight, is $61\frac{3}{4}$ pounds Saxon. And then I say, as $61\frac{3}{4}$ pounds Saxon : 8 pounds Saxon :: 1728 cubic inches : $224\frac{1}{2}$ cubic inches, for contents of the old Saxon gallon for wine and wheat. But as the old standard wine gallon, kept at Guildhall, and found there in 1688, proves to be 224 cubic inches contents, there is reason to conclude it to be of the same standard affize, as was the ancient Saxon gallon for wine and wheat: for, as 1728 cubic inches : 224 cubic inches :: $61\frac{3}{4}$ pounds Saxon : $7\frac{5}{4}$ pounds Saxon, which is about $4\frac{1}{3}$ penny weights short of the 8 pounds, mentioned in the statutes for the gallon to contain, and is such a small difference, as may arise in different

rent years, in the weight of such a quantity of wheat. The very near agreement of these computations, gives us sufficient reason to conclude, that the old standard wine gallon, of 224 cubic inches contents, found at Guildhall in 1688, was of same standard affize, as was the ancient gallon measure ordained to hold 8 Saxon pounds of wheat; and of course then, the bushel measure must have been 1792 cubic inches contents, which will appear to hold nearly 64 Saxon pounds of wheat, as by those old statutes it ought to do. For, as 1728 cubic inches : 1792 cubic inches :: $61\frac{3}{4}$ pounds Saxon : $63\frac{1476}{1728}$ pounds Saxon, which is only about an ounce and three quarters short of 64 pounds; and in so large a quantity of wheat, is a trifling difference, naturally arising in weight of wheat of different years. These demonstrations, by figures, sufficiently prove, what the cubical contents of those ancient English measures must have been, according to the old statutes of affize; that is to say,

The gallon measure, 224 cubic inches contents, to hold 8 pounds Saxon.

The bushel, 1792 ditto,

64 ditto.

And as 8 bushels made a quarter, the quarter contained 512 Saxon pounds of wheat. These were the ancient legal measures, according to the old laws of affize.

It now remains to mention the particular statute of the 12th of HENRY VII. under which, an alteration was brought about in those ancient weights and measures, without seeming to intend it; as the statute itself differs not in substance from the other old laws of affize, except calling the pound by a new name, Troy. But previous thereto,

thereto, it may be necessary to observe, that very probably, the unfettled state of the kingdom for many years preceding, might pave a way to that alteration. There had been several contests about the crown, between the two houses of York and Lancaster, till HENRY VII. by conquest, mounted the throne; and in such times of public disturbance, the laws of assize were more likely to be infringed, than well kept. For, after HENRY VII. was well settled on his throne, we find complaint was made in the 11th year of his reign, that the laws of assize had not been observed and kept. Whereupon he made fresh standards of weights and measures, and sent them to the several shires and Towns in the kingdom. But in the very next year (the 12th of his reign) there came out that particular statute, under which, the weights and measures were altered. Reciting, that the king, in the former year, had made *weights and measures of brass*, according to the *old standards thereof, remaining in his treasury*, which weights and measures are said, on a more diligent examination, to have been *approved defective*. It is not said, whether they were the old standard weights and measures, or the new ones, made in the former year, that had been approved defective; nor how much they were so: all this is left to conjecture. Therefore we may, with great probability, conjecture, they were not defective in respect to their old original standard; but only in respect to the heavier new Troy pound, intended to be then introduced. And what warrants such conjecture is, the express declaration of his son HENRY VIII. when he

abolished the old pound, in the 18th of his reign, and established the Troy; for he then declares, the Troy pound exceedeth the old pound by $\frac{3}{4}$ of an ounce. This sets the matter in a clear light, and shews what the two weights were, and what the difference between them. Hence then, there can be no doubt, but HENRY VII. altered the old English weight, and introduced a heavier Troy pound, that exceeded the old one by $\frac{3}{4}$ of an ounce; and although none of his standard weights have come down to us, yet his brass bushel measure, with his name upon it, was found in the Exchequer in 1688, and proves to be 2145 cubic inches contents; from which we may form conclusions, both on his weights and measures, sufficient to convince us, that he altered both. That his bushel was a measure of 9 gallons instead of 8, and that his Troy pound was $\frac{1}{16}$ part heavier than the old English pound, which was raised from 32 grains of wheat. Experiment hath proved, that a measure of 1728 cubic inches of wheat, will weigh from $47\frac{1}{2}$ to about $48\frac{1}{4}$ pounds Avoirdupois; but suppose it be only $47\frac{3}{4}$ pounds Avoirdupois, that, in Troy weight, will be $58\frac{17}{576}$ pounds Troy. From hence we may easily find the weight of wheat that 2145 cubic inches will contain. For, as 1728 cubic inches : 2145 cubic inches :: $58\frac{17}{576}$ pounds Troy : 72 pounds Troy, the weight of wheat that HENRY VIITH's bushel would contain. And dividing the 72 by 8, the number of pounds limited by the statute to a gallon, it proves HENRY VIITH's bushel was a measure of 9 gallons instead of 8; and as 8 bushels made a quarter, then the quarter contained 72
gallons.

gallons; this seems to correspond with the number of gallons contained in the vessel, called a fatt, the use of which was prohibited by statute in HENRY VIth's time, about 60 years before HENRY VII. as hath herein been already remarked. If we divide the 2145 cubic inches contents of the bushel, by 9, the number of gallons it contained, it shews the gallon measure to be $238\frac{1}{3}$ cubic inches contents, which is $\frac{1}{16}$ part larger than the old Saxon gallon of 224 cubic inches, just in the proportion as the Troy pound is $\frac{1}{16}$ part heavier than the old Saxon pound. The statute limits the gallon to hold 8 pounds Troy of wheat; and so we find the gallon of $238\frac{1}{3}$ cubic inches will do: for as 2145 cubic inches : $238\frac{1}{3}$ cubic inches :: 72 pounds Troy : 8 pounds Troy. But if it be said, the statute limits the bushel to 8 gallons, not 9, then the gallon measure must have been $268\frac{1}{8}$ cubic inches contents, and would hold 9 pounds Troy of wheat, though the statute says it was to hold but 8 pounds Troy. Take it either way, it shews that the bushel was not made according to the statute; it held 72 pounds instead of 64 pounds. And upon the whole it clearly proves, that HENRY VII. altered both the weights and the measures; that he introduced the Troy pound, which was heavier by $\frac{3}{4}$ of an ounce than the Saxon or old English pound; and that his bushel measure was about $\frac{1}{6}$ th part larger than the ancient Saxon or old English bushel measure. The first statute that directs the use of the Avoirdupois weight is, that of the 24th of HENRY VIII. which plainly implies it was no legal weight, till that statute gave it a legal

gal function; and the particular use to which the said weight is there directed, is simply for weighing butchers meat in the market. And it is note-worthy, that in all the old statutes of assize prior to HENRY VII. the legal gallon measure of capacity is founded on 8 pounds, raised from the weight of 32 grains of wheat, and by that statute of 12th HENRY VII. the gallon is to contain 8 pounds Troy: therefore, these two sorts of weight were the only ones established as legal by the statutes; and both are a lighter weight than Avoirdupois. How, or when, the Avoirdupois weight came first into private use is not clearly known to us; but this seems clear, that no statute before the 24th HENRY VIII. hath given it any legal function.